Notice of Allowability	Application No.	Applicant(s)	
	10/664,768	LEVIN, CRAIG S.	
	Examiner	Art Unit	
	Faye Polyzos	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *3 October 2005*.

2. ☒ The allowed claim(s) is/are *3-5,8-10,12-21,23,24,26 and 28*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S STATEMENT OF REASONS FOR ALLOWANCE

Comment on Submissions

1. This communication is responsive to submissions 3 October 2005.

Allowable Subject Matter

2. Claims 3-5, 8-10, 12-21, 23-24, 26 and 28 are allowed.

3. The following is an examiner's statement of reasons for allowance:

Regarding independent claim 3, the prior art does not disclose or fairly suggest a radiation imaging device comprising intervening semiconductor photodetector positional detectors comprising photodetector line arrays.

The examiner notes that while it is known in the art of a radiation imaging device comprising a multi-layer detector array where an individual subsensor assembly (13), including a PCB, silicon or sapphire substrate, a detector array, an amplifier array and a scintillator slab, is used to form the multi-layer detector array (see for example *Stettner et al – US 5,099,128 A* – Figs. 3a-3b and col. 3, lines 55-66), upon reconsideration it is agreed that the prior art does not suggest intervening semiconductor photodetector positional detectors comprising photodetector line arrays.

Regarding independent claim 5, the prior art does not disclose or fairly suggest a radiation imaging device comprising intervening semiconductor photodetector positional detectors comprise segmented photodetector line arrays.

The examiner notes that while it is known in the art of a radiation imaging device comprising a multi-layer detector array where an individual subsensor assembly (13), including a PCB, silicon or sapphire substrate, a detector array, an amplifier array and a

scintillator slab, is used to form the multi-layer detector array (see for example *Stettner et al – US 5,099,128 A* – Figs. 3a-3b and col. 3, lines 55-66), upon reconsideration it is agreed that the prior art does not suggest intervening semiconductor photodetector positional detectors comprising segmented photodetector line arrays. .

Regarding independent claim 8, the prior art does not disclose or fairly suggest a radiation imaging device comprising an scintillation crystal detection array arranged to receive the emissions by end faces of the crystal sheets in a direction incident to the end faces of the crystal sheets and intervening semiconductor photodetector positional detectors comprise photodetector line arrays.

The examiner notes that while it is known in the art of a radiation imaging device comprising a multi-layer detector array where an individual subsensor assembly (13), including a PCB, silicon or sapphire substrate, a detector array, an amplifier array and a scintillator slab, is used to form the multi-layer detector array (see for example *Stettner et al – US 5,099,128 A* – Figs. 3a-3b and col. 3, lines 55-66), upon reconsideration it is agreed that the prior art does not suggest an arrangement of scintillation crystal sheets to receive emissions by end faces of crystal sheets as well as intervening semiconductor photodetector positional detectors comprise photodetector line arrays.

Regarding independent claim 12, the prior art does not disclose or fairly suggest a radiation imaging device comprising intervening semiconductor photodetector positional detectors have a thickness of $\leq$ 300 μm.

The examiner notes that while it is known in the art of a radiation imaging device comprising a microchannel plate and anode combination have a thickness of 0.2 to 0.3

centimeters (see for example *Stettner et al – US 5,099,128 A* –col. 4, lines 19-28), upon reconsideration it is agreed that the prior art does not suggest the intervening semiconductor photodetector positional detectors having a thickness of less than or equal to 300 micrometers.

Regarding independent claim 15, the prior art does not disclose or fairly suggest a radiation imaging device comprising intervening semiconductor photodetector positional detectors comprise semiconductor photodetectors formed directly on one of the plurality of crystal sheets, the crystal sheets forming a substrate.

The examiner notes that while it is known in the art of a radiation imaging device structure comprising crystal sheet (15), microchannel plate amplifer array (16), detector array of anodes (18) and silicon or sapphire substrate (20) and printed circuit board (23), upon reconsideration it is agreed that the prior art does not suggest of directly forming semiconductor photodetectors on one of the plurality of crystal sheets forming a substrate.

Regarding independent claim 16, the prior art does not disclose or fairly suggest a radiation imaging device comprising intervening semiconductor photodetectors each supported by a thin ceramic substrate.

The examiner notes that while it is known in the art of a radiation imaging device structure comprising crystal sheet (15), microchannel plate amplifer array (16), detector array of anodes (18) and silicon or sapphire substrate (20) and printed circuit board (23), upon reconsideration it is agreed that the prior art does not suggest of a thin ceramic substrate utilized to permit a high resolution radiation imaging device.

Regarding independent claim 23, the prior art does not disclose or fairly suggest a radiation imaging device comprising intervening semiconductor photodetector positional detectors have a thickness of $\leq$ 300 μm.

The examiner notes that while it is known in the art of a radiation imaging device comprising a microchannel plate and anode combination have a thickness of 0.2 to 0.3 centimeters and semiconductor photodetector positional detectors reading light from large faces of the scintialltion crystal sheets to detect interactions in the scintillation crystal sheets in order to independently provide positional information concerning interactions relative to at least one axis (see for example *Stettner et al – US 5,099,128 A* – Figs. 1b, 3a-3b, 4a and col. 1, lines 51-57 and col. 3, lines 55-68), upon reconsideration it is agreed that the prior art does not suggest the intervening semiconductor photodetector positional detectors having a thickness of less than or equal to 300 micrometers.

Regarding independent claim 24, the prior art does not disclose or fairly suggest a radiation imaging device wherein alternating semiconductor photodetector positional detectors are oriented to form a cross-grid arrangement of photodetector line arrays.

The examiner notes that while it is known in the art of a radiation imaging device comprising semiconductor photodetector positional detectors reading light from large faces of the scintialltion crystal sheets to detect interactions in the scintillation crystal sheets in order to independently provide positional information concerning interactions relative to at least one axis (see for example *Stettner et al – US 5,099,128 A* – Figs. 1b, 3a-3b, 4a and col. 1, lines 51-57 and col. 3, lines 55-68), upon reconsideration it is

agreed that the prior art does not suggest the alternating ones of semiconductor photodetector positional detectors oriented to form a cross-grid arrangement.

Regarding independent claim 26, the prior art does not disclose or fairly suggest a radiation imaging device comprising intervening semiconductor photodetectors each supported by a thin ceramic substrate.

The examiner notes that while it is known in the art of a radiation imaging device comprising semiconductor photodetector positional detectors reading light from large faces of the scintialltion crystal sheets to detect interactions in the scintillation crystal sheets in order to independently provide positional information concerning interactions relative to at least one axis (see for example *Stettner et al – US 5,099,128 A* – Figs. 1b, 3a-3b, 4a and col. 1, lines 51-57 and col. 3, lines 55-68), upon reconsideration it is agreed that the prior art does not suggest of a thin ceramic substrate utilized to permit a high resolution radiation imaging device.

Regarding independent claim 28, the prior art does not disclose or fairly suggest a radiation imaging device comprising semiconductor photodetector positional detectors formed directly on corresponding large faces of scintillation crystal sheets.

The examiner notes that while it is known in the art of a radiation imaging device comprising semiconductor photodetector positional detectors reading light from large faces of the scintialltion crystal sheets to detect interactions in the scintillation crystal sheets in order to independently provide positional information concerning interactions relative to at least one axis and a detector array of anodes (18) formed on a silicon or sapphire substrate (20) and are separated from a scintillator crystal slab by an amplifier

array (16)(see for example *Stettner et al – US 5,099,128 A* – Figs. 1b, 3a-3b, 4a and col. 1, lines 51-57 and col. 3, lines 55-68), upon reconsideration it is agreed that the prior art does not suggest of the semiconductor photodetector positional detectors to be formed directly on corresponding large faces of the scintillation crystal sheet to provide for a very high sensitivity radiation imaging device.

The remaining claims 4, 9-10, 13-14 and 17-21 are allowable based on their dependency.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Faye Polyzos whose telephone number is 571-272-2447. The examiner can normally be reached on Monday thru Friday from 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

5. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

FP

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